PETROGRAPHY.

Experimental Petrography. — Morozewicz[1] has just published a long paper on "Experimental investigations upon the formation of minerals in magmas" that will unquestionably take a place among the most important contributions to experimental geology that have been made within recent years. The author fused known mixtures of the various rock-producing compounds in a glass-furnace and thoroughly studied the resulting products. The conclusions reached by him are full of suggestiveness. The way seems to have been opened for a long line of important investigations to follow, some of which have already been entered upon.

The details of the experiments cannot be entered upon here, but some of the conclusions arrived at may be briefly indicated.

1. The structures of cooled magmas appear to depend upon exterior conditions of crystallization and upon their chemical composition, quantitative as well as qualitative.

2. The order of crystallization is determined by no one condition, such as fusibility, acidity, etc., but it depends upon a number of variable conditions, one of the most important of which is the quantity of the various constituents present as compared with their solubility in the molten mass. The ability of a substance to supersaturate the magma depends primarily upon its nature, the nature of the other substances composing the magma, and its temperature.

3. So far as the experiments touch upon the question of the differentiation of magmas, they seem to indicate that a molten mass may separate into layers or parts differing in density, and that this difference may be due to the fact that the bases FeO, MgO, CaO, separate as silicates by crystallization earlier than the remaining constituents.

Two pounds of granite, with the composition given below (I), were heated for five days. The mixture yielded a mass of glass which in its upper portion contained unmelted quartz grains and a considerable quantity of tridymite. Though the glass between the quartz grains in the upper portion of the crucible presented the same appearance as that in the lower parts, the composition of pieces taken from the two parts was found to be quite different. Under (II) we

[1] *Min. u. Petrog. Mitth.*, vol. xviii, pp. 1 and 105.

have the analysis of the glass from the upper part, and under (III) that of the glass from the lower portion.

	SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	K_2O	Na_2O		Total.	Sp. Gr.
(I)	68.9	19.7	1.4	1.2	1.0	2.7	4.7	=	99.6	2.716
(II)	73.65	14.08	2.33	1.94	.65	2.61	3.86	=	99.12	2.2384
(III)	59.20	22.30	3.83	3.71	1.23	3.26	5.40	=	98.93	2.484

The Basic Rocks of Ivrea. — The basis rocks in the neighborhood of Ivrea, on the south side of the Alps, are shown by Schaefer [1] to be the result of cooling of a single magma. This yielded norites, diorites, gabbros, peridotites and both basic and acid dyke-rocks. The norites include hornblendic varieties, and the diorites, bronzitic, hornblendic, and biotitic phases. All these rocks have been subjected to the action of mountain-making forces. The norites have become schistose without suffering any essential mineralogical change. Some of the diorites have simply been made schistose, others have undergone a further change in that their dark, compact hornblende has passed over into a light green amphibole, while a final stage of alteration is represented by green schists, composed of zoisite, plagioclase, actinolite, chlorite, and epidote.

The dyke rocks cut the large basic masses and are always closely related to them chemically. The principal types are a labradorite (Labradorfels) and a fine-grained black rock which the author calls valbellite. This is made up of bronzite, olivine, and brown hornblende with pyrrhotite, spinel, and magnetite as accessories.

The Basalts of Steiermark. — Sigmund's [2] studies on the basalts of Steiermark are continued in an article in which are described the magma-basalts and basalt-tuffs of Fürstenfeld and the feldspar basalt of Weitendorf. The composition of the magma-basalt is shown by the figures below.

SiO_2	TiO_2	Fe_2O_3	FeO	Al_2O_3	CaO	MgO	Na_2O	K_2O	CO_2	H_2O		Total.
46.76	tr.	5.33	5.62	17.93	8.24	7.31	3.53	2.20	1.33	1.83	=	100.08

Petrographical Notes. — Reinisch [3] has found a specimen of teschenite in the museum at Minussinsk. It is labeled as having come from east of the salt lake Staniza on the river Bjelyi-Jjuss, Minussinsk parish, Jenisseisk gouvernement, East Siberia. It resembles very closely the West Carpathian rock. Among the other specimens from

[1] *Min. u. Petrog. Mitth.*, vol. xvii, p. 495.
[2] *Ibid.*, p. 256.
[3] *Ibid.*, vol. xviii, p. 92.